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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/613,082	07/07/2003	Sadao Fujii	116472	6984
25944	7590	06/17/2005	EXAMINER	
OLIFF & BERRIDGE, PLC P.O. BOX 19928 ALEXANDRIA, VA 22320			KAO, CHIH CHENG G	
			ART UNIT	PAPER NUMBER
			2882	

DATE MAILED: 06/17/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/613,082

Applicant(s)

FUJII ET AL.

Examiner

Chih-Cheng Glen Kao

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 05 May 2005.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1 and 6-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 and 6-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 May 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 5/5/05.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Claim Objections*

1. Claim 1 is objected to because of the following informality, which appears to be a minor draft error including grammatical problems.

In the following format (location of objection; suggestion for correction), the following correction may obviate the objection: (claim 1, line 12, "an object lens"; replacing "object" with - -objective- -).

For purposes of examination, the claim has been treated as such. Appropriate correction is required.

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claim 1, 6-9, 14, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kinoshita et al. (US Patent 5095243) in view of Hirose (US Patent 5045696) and Nagai et al. (US Patent 5533083).

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3. Regarding claim 1, Kinoshita et al. discloses an apparatus comprising an x-ray generator (fig. 1, "x-rays", and fig. 3, #11), a photocathode (fig. 2) disposed on a path of x-rays generated by the x-ray generator, the photocathode being configured to produce electrons when irradiated with x-rays generated by the x-ray generator (abstract, lines 1-2) so that an electron image of a specimen (col. 1, lines 19-20 and 32-37) is formed, an electron image enlarging device configured to enlarge the electron image of the specimen (fig. 1, #1 and 6), the electron image enlarging device including an acceleration electrode (fig. 1, #5) configured to accelerate electrons produced by the photocathode and a magnetic lens (fig. 1, #6) configured to enlarge and focus (col. 3, lines 31-32) an electron beam of electrons emitted by the photocathode, the magnetic lens including a first magnetic lens configured to act as an objective lens (fig. 1, #6), and a second magnetic lens configured to act as a projection lens (fig. 1, #7); an electron beam detecting device (fig. 1, #3) configured to detect an electron beam focused thereon by the electron image enlarging device, and an image processing device configured to process an electron image formed by the electron beam detecting device so as to provide a visible image (fig. 3, #20).

However, Kinoshita et al. does not disclose a specimen held on a photocathode, an anode, and an x-ray generator including a laser capable of generating X-rays by irradiating a target with a laser beam.

Hirose teaches a specimen held on a photocathode (fig. 2, #2 and #3b) and anode (fig. 2, #8). Nagai et al. teaches an x-ray generator including a laser capable of generating X-rays by irradiating a target with a laser beam (col. 1, lines 56-60).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to incorporate the apparatus of Kinoshita et al. with the specimen on a photocathode of Hirose, since one would be motivated to make such a modification to make the apparatus more compact (fig. 2) as implied from Hirose.

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to incorporate the apparatus of Kinoshita et al. with the anode of Hirose, since one would be motivated to make such a modification to more easily direct electrons (fig. 2) as implied from Hirose.

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to incorporate the apparatus of Kinoshita et al. with the laser and target of Nagai et al., since one would be motivated to make such a modification for a more compact apparatus (col. 2, lines 15-17) as shown by Nagai et al.

4. Regarding claim 6, Kinoshita et al. further discloses x-rays generated by the x-ray generator applied directly to the photocathode (fig. 1, "x-rays" to #2).

5. Regarding claim 7, Kinoshita et al. as modified above suggests an apparatus as recited above.

However, Kinoshita et al. does not disclose a condensing device capable of condensing x-rays generated by an x-ray generator so that condensed x-rays are applied.

Nagai et al. teaches a condensing device capable of condensing x-rays generated by an x-ray generator so that condensed x-rays are applied (fig. 25, condensing device between #818 and 801).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to further incorporate the apparatus of Kinoshita et al. as modified above with the condensing device of Nagai et al., since one would be motivated to make such a modification to intensify the strength of radiation (fig. 25) as implied from Nagai et al. for a better image.

6. Regarding claims 8 and 9, Kinoshita et al. as modified above suggests an apparatus as recited above.

However, Kinoshita et al. does not disclose a thin film capable of transmitting x-rays that covers a target with a material that transmits in a range of 2.3 to 4.4 nm.

Nagai et al. teaches a thin film capable of transmitting x-rays that covers a target (fig. 24, #707), which would necessarily have a material that transmits in a range of 2.3 to 4.4 nm, since this is characteristic of silicon nitride (col. 12, lines 5-7).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to incorporate the apparatus of Kinoshita et al. as modified above with the thin film cover of Nagai et al., since one would be motivated to make such a modification to provide protection from air and reduce x-ray loss (col. 2, lines 19-20) as implied from Nagai et al.

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7. Regarding claims 14 and 15, Kinoshita et al. as modified above suggests an apparatus as recited above.

However, Kinoshita et al. does not disclose an electron image enlarging device being set such that an axis of an electron beam is vertical with the x-ray generator disposed above the enlarging device.

Hirose further teaches an electron image enlarging device being set such that an axis of an electron beam is vertical (fig. 1, section between #1 and 15) with the x-ray generator (fig. 1, #1) disposed above the enlarging device.

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to further incorporate the apparatus of Kinoshita et al. as modified above with the vertical arrangement of Hirose, since rearranging parts of an invention involves only routine skill in the art. One would be motivated to make such a modification to make it easier for more electrons to move towards the detector (fig. 1) and keep the device compact as implied from Hirose.

8. Claims 10-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kinoshita et al., Hirose, and Nagai et al. as applied to claim 1 above, and further in view of Tomie (US Patent 5569916).

9. Regarding claims 10 and 12, Kinoshita et al. as modified above suggests an apparatus as recited above. Kinoshita et al. further discloses an electron beam and x-ray beam having the same axis.

However, Kinoshita et al. does not disclose a laser beam axis parallel to an electron beam axis, wherein both axes are in a common vertical plane.

Tomie further teaches a laser beam axis (fig. 2, axis of laser beam from #11) parallel to an x-ray beam axis (fig. 2, axis of #17), wherein both axes are in a common vertical plane.

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to incorporate the apparatus of Kinoshita et al. as modified above with the laser beam axis of Tomie to have a laser and electron beam axis parallel and in a common vertical plane, which is explained with motivation as follows. The electron beam of Kinoshita et al. has the same axis as the x-ray beam. The laser beam axis of Tomie is parallel to an x-ray beam axis, wherein both axes are in a common vertical plane. If the modification of Kinoshita et al. with Tomie is obvious, then the laser beam axis would be parallel to an electron beam axis, wherein both axes are in a common vertical plane. The above modification would have been obvious, since one would be motivated to make such a modification to make an apparatus more compact (fig. 2) as implied from Tomie. Furthermore, rearranging parts of an invention only involves routine skill in the art.

10. Regarding claim 11, Kinoshita et al. as modified above suggests an apparatus as recited above.

However, Kinoshita et al. does not disclose laser and electron beam axes in a common horizontal plane.

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to incorporate the apparatus of Kinoshita et al. as modified above with laser



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and electron beam axes in a common horizontal plane, since rearranging parts of an invention only involves routine skill in the art. One would be motivated to make such a modification to keep floor space clear for more leg room under the table (fig. 24) as implied from Nagai et al.

11. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kinoshita et al., Hirose, Nagai et al., and Tomie as applied to claim 12 above, and further in view of Tamura et al.

Kinoshita et al. as modified above suggests an apparatus as recited above.

However, Kinoshita et al. does not disclose a laser below an enlarging device, a power supply below the laser, and an evacuating unit below the laser.

Tamura et al. teaches a laser (title, and fig. 1, #1) below an enlarging device (fig. 1, #18). Hirose further teaches a power supply (fig. 1, #22). Nagai et al. further teaches an evacuating unit (fig. 16, pumps).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to incorporate the apparatus of Kinoshita et al. as modified above with the arrangement of Tamura et al., since rearranging parts of an invention involves only routine skill in the art. One would be motivated to make such a modification to keep the device compact (fig. 1) as implied from Tamura et al.

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to further incorporate the apparatus of Kinoshita et al. as modified above with the power supply of Hirose, since one would be motivated to make such a modification to keep the apparatus running for an indefinite amount of time.

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to further incorporate the apparatus of Kinoshita et al. as modified above with evacuating unit of Nagai et al., since one would be motivated to make such a modification to reduce x-ray loss in air (col. 2, lines 18-19) as implied from Nagai et al.

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to incorporate the apparatus of Kinoshita et al. as modified above with a power supply and evacuating unit below a laser, since rearranging parts of an invention only involves routine skill in the art. One would be motivated to make such a modification to allow for easier access if one of those components breaks down, while staying away from other sensitive components.

12. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kinoshita et al., Hirose, and Nagai et al. as applied to claim 14 above, and further in view of Tamura et al.

Kinoshita et al. as modified above suggests an apparatus as recited above.

However, Kinoshita et al. does not disclose an x-ray generator below an enlarging device.

Tamura et al. teaches an x-ray generator (title, and fig. 1, #1 and 5) below an enlarging device (fig. 1, #18).

It would have been obvious, to one having ordinary skill in the art at the time the invention was made, to incorporate the apparatus of Kinoshita et al. as modified above with the arrangement of Tamura et al., since rearranging parts of an invention involves only routine skill in the art. One would be motivated to make such a modification to keep the device compact (fig. 1) as implied from Tamura et al.

*Response to Arguments*

13. Objections to the drawings and claims in the Office Action mailed 1/11/05 have been withdrawn in light of the Amendment filed 5/5/05.

14. Applicant's arguments with respect to claims 1 and 6-16 have been considered but are moot in view of the new ground(s) of rejection. Applicant's arguments filed 5/5/05 have been fully considered but they are not persuasive.

Regarding claim 1, Applicants argue that Kinoshita et al. is completely different from Hirose in terms of a principle of forming an image. The Examiner disagrees. In Kinoshita et al. an x-ray image (fig. 1, x-rays) is transmitted onto a photocathode (fig. 1, #2) so as to generate electrons to be imaged. In Hirose, an x-ray image (fig. 1, image from #2 due to #1) is transmitted onto a photocathode (fig. 1, #3b) so as to generate electrons to be imaged. In both references, the specimen is placed before the photocathode. Therefore, Kinoshita et al. and Hirose are similar in terms of a principle of forming an image, and it is technically reasonable to combine Hirose with Kinoshita et al. in order to arrive at the claimed subject matter.

Furthermore, in response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. Applicants argue that the electron image enlarging device of Hirose is different, in that it diverges electrons instead of focuses, thus concluding that the combination is technically unreasonable. The Examiner is not substituting the entire electron image enlarging device of Hirose into the system of Kinoshita et al., but just the concept of

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placing a specimen on the photocathode. Such a concept would be advantageous in either electron image enlarging device of Hirose or Kinoshita et al. for purposes of compacting the apparatus.

Applicants further argue that adding an acceleration electrode is technically unreasonable because it would deteriorate the quality of an image. The Examiner disagrees. Image quality deterioration as described in Nature, Vol. 290, is associated with a superconductive coil. The acceleration electrode being added is a grid (fig. 1, #8), not a superconductive coil. Therefore, Applicants' arguments based on statements from Nature, Vol. 290, do not directly apply to a grid.

In conclusion, Applicants' arguments are not persuasive, and the prior art remains applicable.

### *Conclusion*

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

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however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

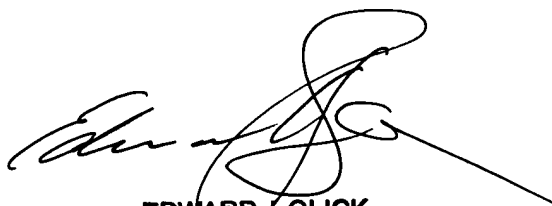
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chih-Cheng Glen Kao whose telephone number is (571) 272-2492. The examiner can normally be reached on M - F (9 am to 5 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ed Glick can be reached on (571) 272-2490. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



gk



EDWARD J. GLICK  
SUPERVISORY PATENT EXAMINER



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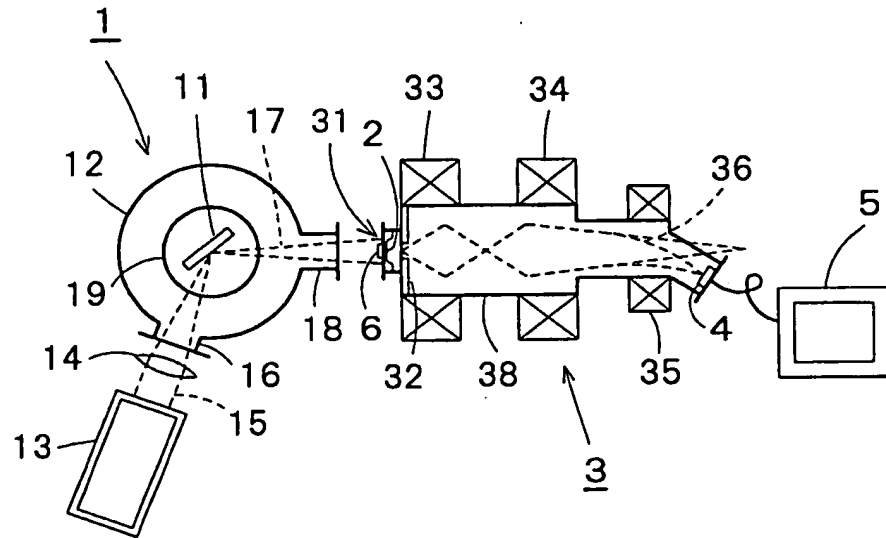


FIG. 1

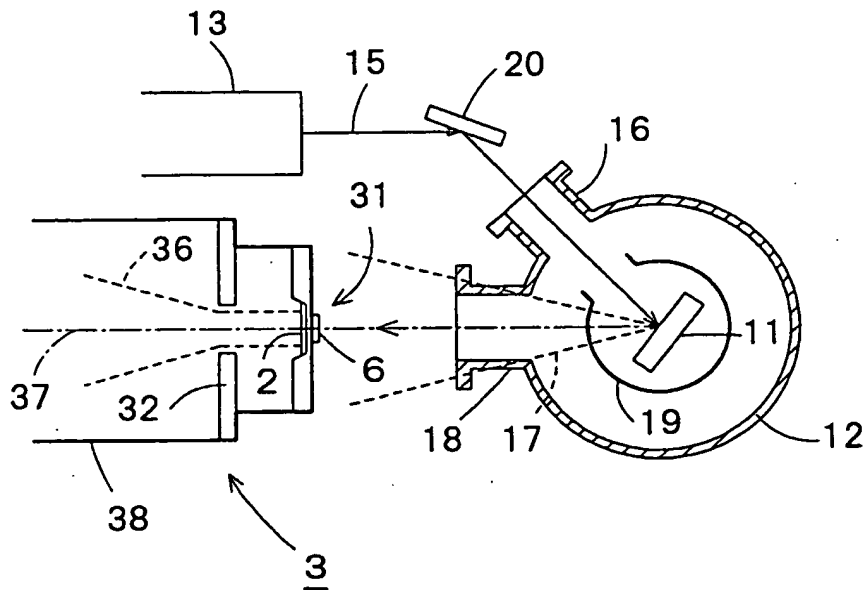


FIG. 2

Approved  
CK  
5/17/05